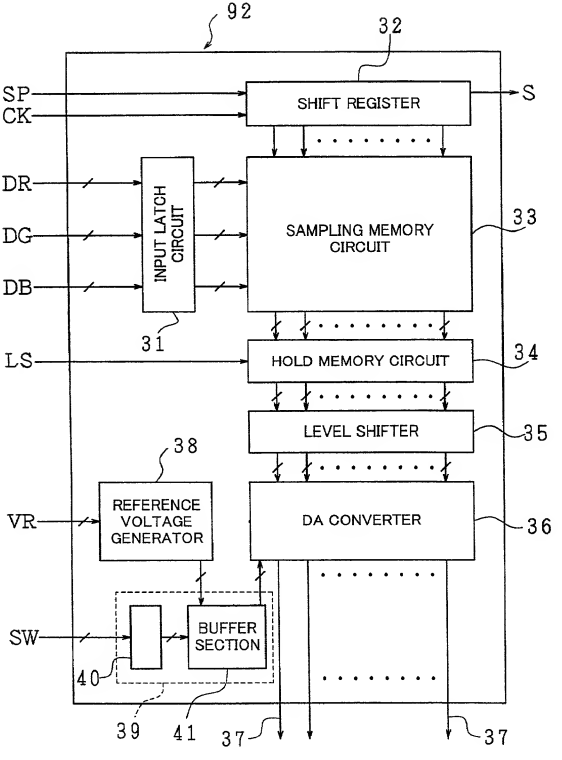
FIG. 1


92
32
SP
CK
SHIFT REGISTER
S
DR
DG
DB
INPUT LATCH CIRCUIT
SAMPLING MEMORY CIRCUIT
33
31
LS
HOLD MEMORY CIRCUIT
34
LEVEL SHIFTER
35
38
VR
REFERENCE VOLTAGE GENERATOR
DA CONVERTER
36
SW
BUFFER SECTION
40
39
41
37
37

TOSTOT 0704.2660

FIG. 2

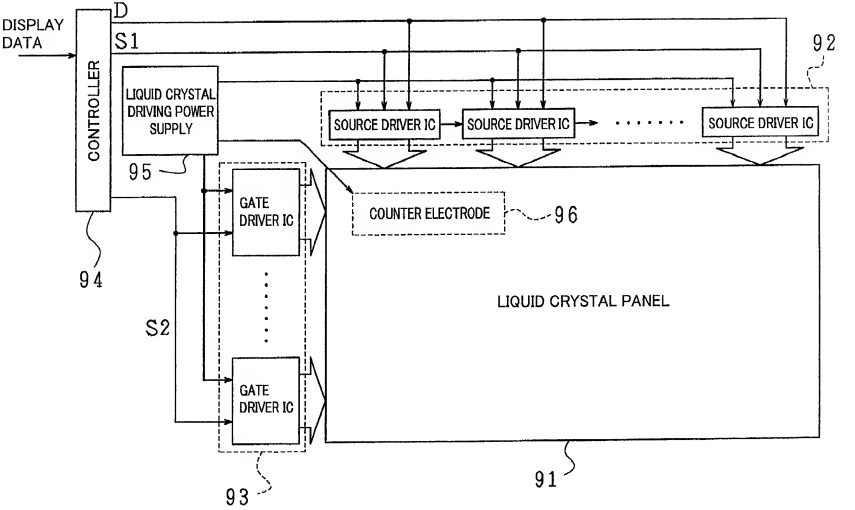
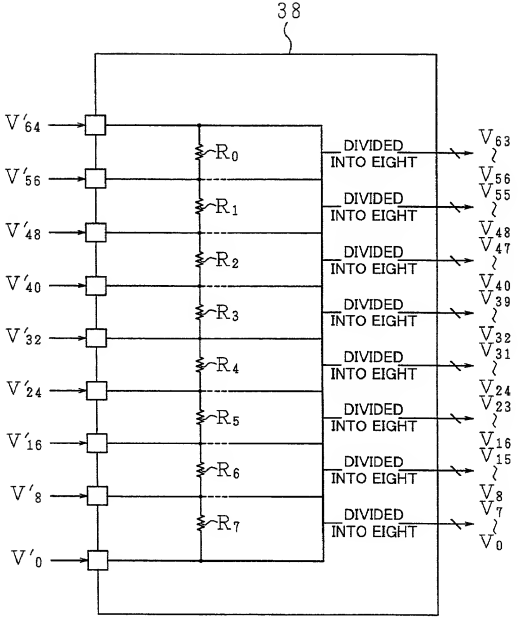


FIG. 3


38
V'64
V'56
V'48
V'40
V'32
V'24
V'16
V'8
V'0
R0
R1
R2
R3
R4
R5
R6
R7
DIVIDED INTO EIGHT
V63
V56
V55
V48
V47
V40
V39
V32
V31
V24
V23
V16
V15
V8
V7
V0

TOSTOT-0161660

FIG. 4

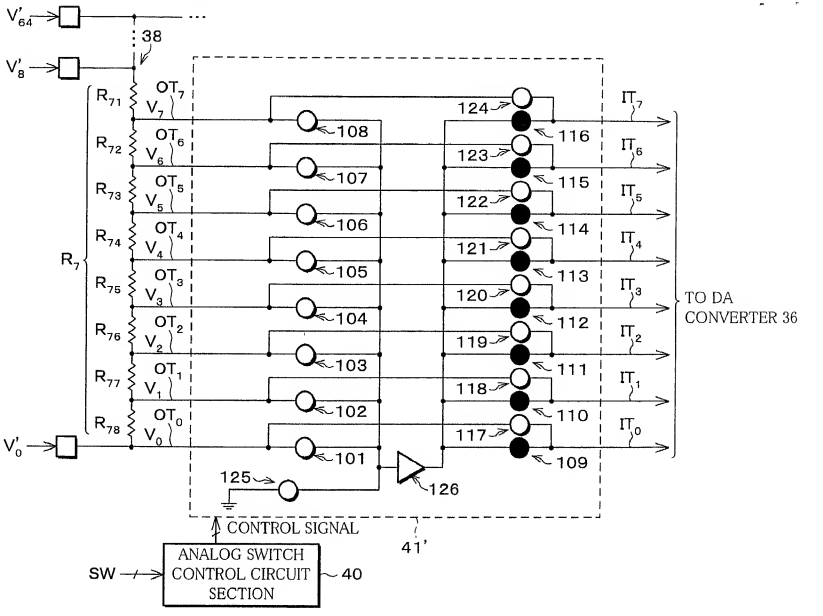
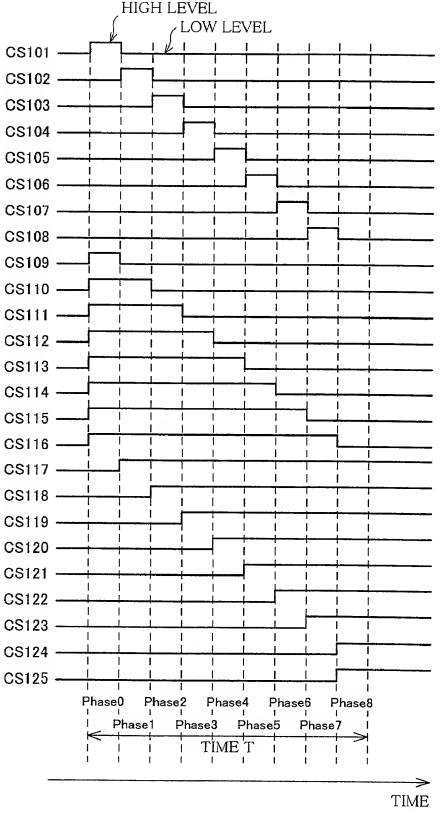


FIG. 5


HIGH LEVEL
LOW LEVEL
CS101
CS102
CS103
CS104
CS105
CS106
CS107
CS108
CS109
CS110
CS111
CS112
CS113
CS114
CS115
CS116
CS117
CS118
CS119
CS120
CS121
CS122
CS123
CS124
CS125
Phase0
Phase1
Phase2
Phase3
Phase4
Phase5
Phase6
Phase7
Phase8
TIME T
TIME

JP2007-065660

FIG. 6 (a)

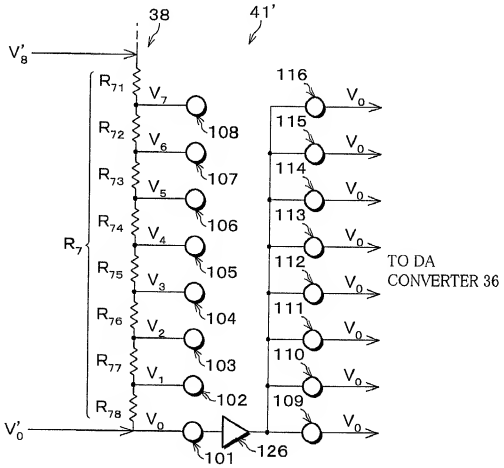


FIG. 6 (b)

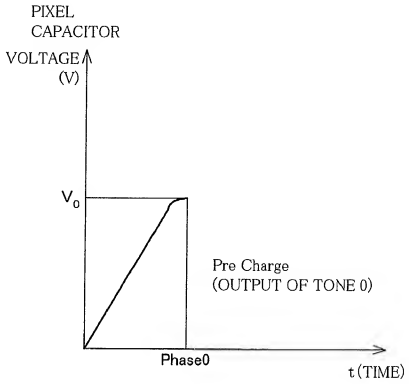


FIG. 7 (a)

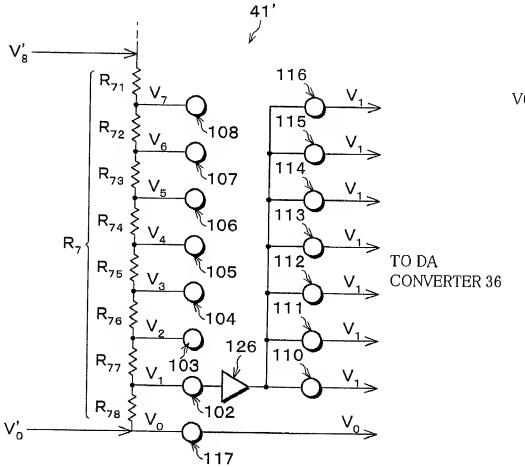
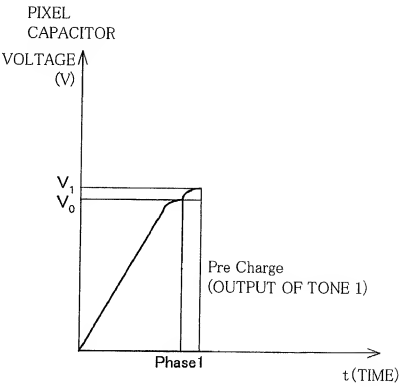

41'
V'8
R71
R72
R73
R74
R75
R76
R77
R78
R7
V7
V6
V5
V4
V3
V2
V1
V0
V'0
108
107
106
105
104
103
102
117
126
116
115
114
113
112
111
110
V1
V0
TO DA
CONVERTER 36

FIG. 7 (b)


PIXEL
CAPACITOR
VOLTAGE
(V)
V1
V0
Pre Charge
(OUTPUT OF TONE 1)
Phase1
t(TIME)

JP2007-316260

FIG. 8 (a)

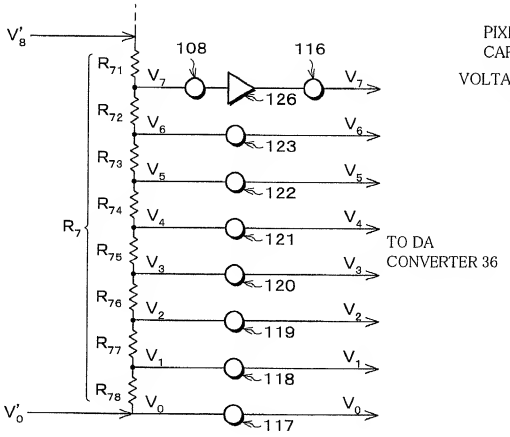


FIG. 8 (b)

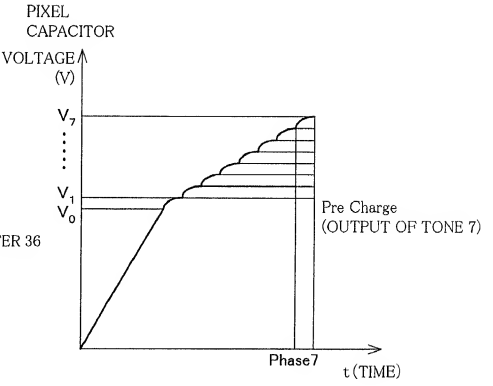


FIG. 9 (a)

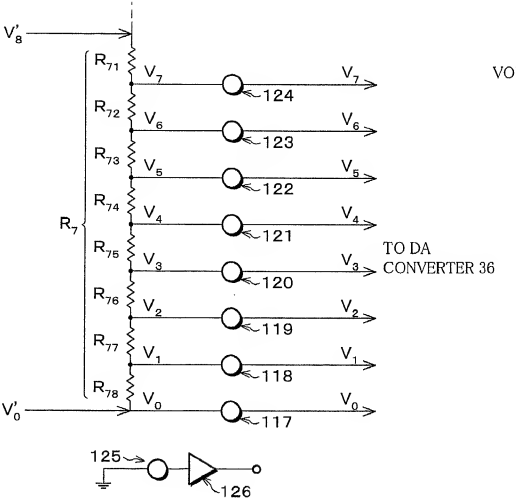

V'8
R71
R72
R73
R74
R7
R75
R76
R77
R78
V'0
V7
V6
V5
V4
V3
V2
V1
V0
124
123
122
121
120
119
118
117
TO DA CONVERTER 36
125
126

FIG. 9 (b)

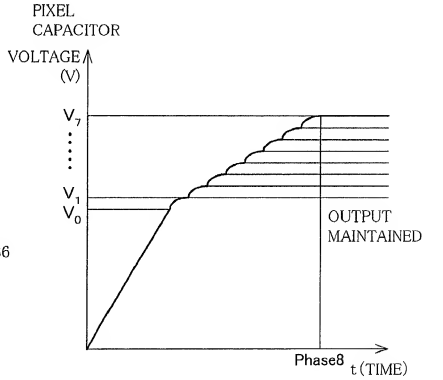

PIXEL CAPACITOR VOLTAGE (V)
V7
V1
V0
OUTPUT MAINTAINED
Phase8
t (TIME)

FIG. 10

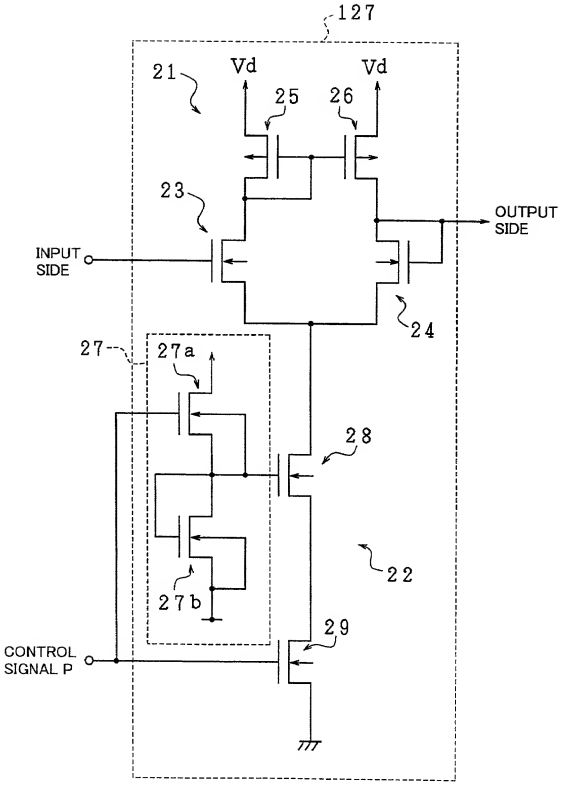

127
21
Vd
Vd
25
26
23
OUTPUT SIDE
INPUT SIDE
24
27
27a
28
22
27b
29
CONTROL SIGNAL P

FIG. 11

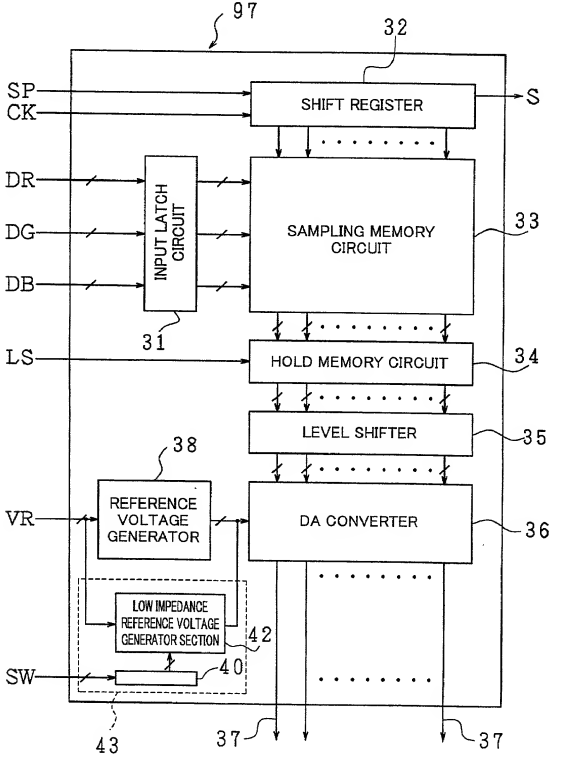
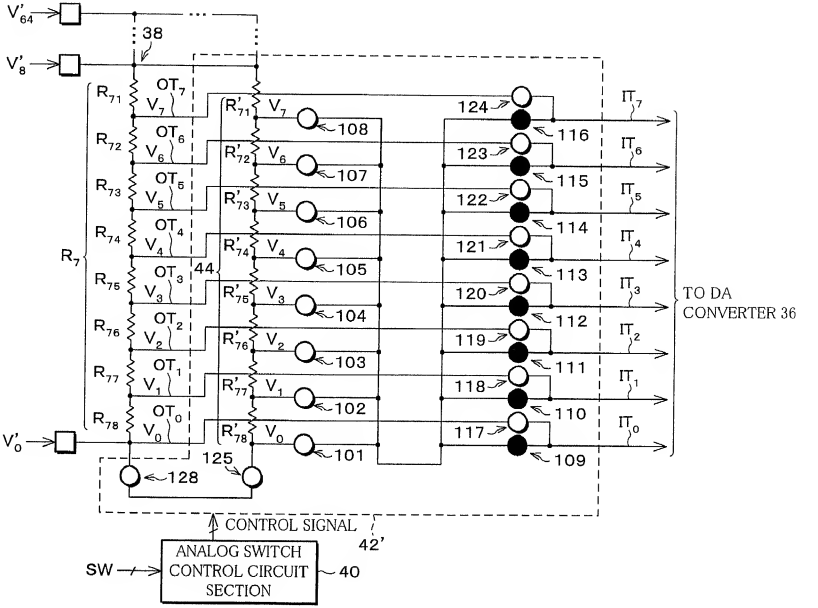

97
32
SP
CK
SHIFT REGISTER
S
DR
DG
DB
INPUT LATCH CIRCUIT
SAMPLING MEMORY CIRCUIT
33
31
LS
HOLD MEMORY CIRCUIT
34
LEVEL SHIFTER
35
38
VR
REFERENCE VOLTAGE GENERATOR
DA CONVERTER
36
LOW IMPEDANCE REFERENCE VOLTAGE GENERATOR SECTION
42
SW
40
43
37
37

FIG. 12


V'64
V'8
V'0
38
R71
R72
R73
R74
R75
R76
R77
R78
R7
OT7
OT6
OT5
OT4
OT3
OT2
OT1
OT0
V7
V6
V5
V4
V3
V2
V1
V0
R'71
R'72
R'73
R'74
R'75
R'76
R'77
R'78
44
108
107
106
105
104
103
102
101
125
128
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
Π7
Π6
Π5
Π4
Π3
Π2
Π1
Π0
TO DA CONVERTER 36
CONTROL SIGNAL
42'
SW
ANALOG SWITCH CONTROL CIRCUIT SECTION
40

TOSTOT OFFICE

FIG. 13

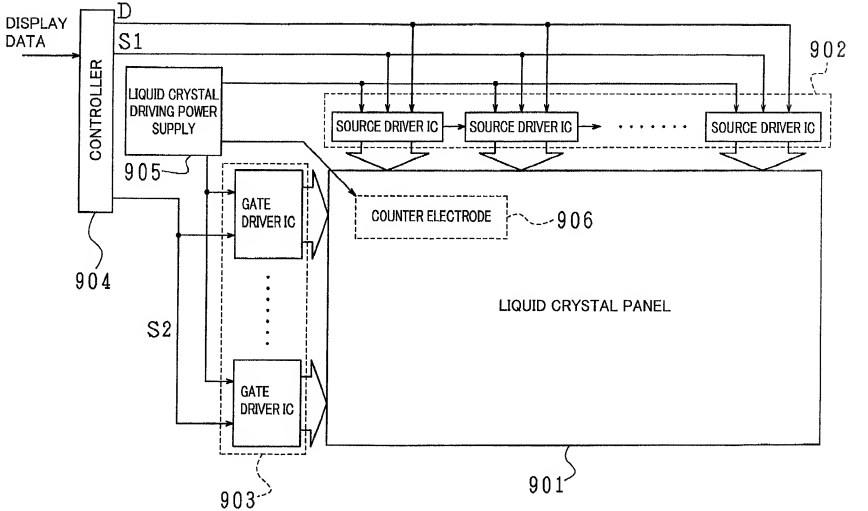


FIG. 14

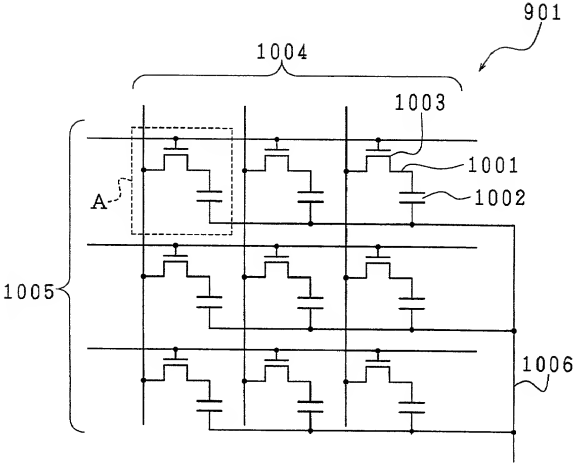


FIG. 15

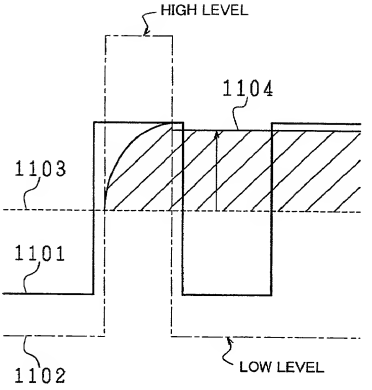

HIGH LEVEL
1104
1103
1101
1102
LOW LEVEL

FIG. 16

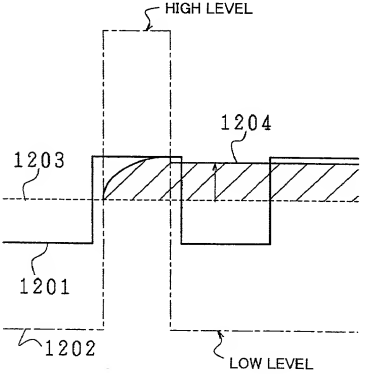
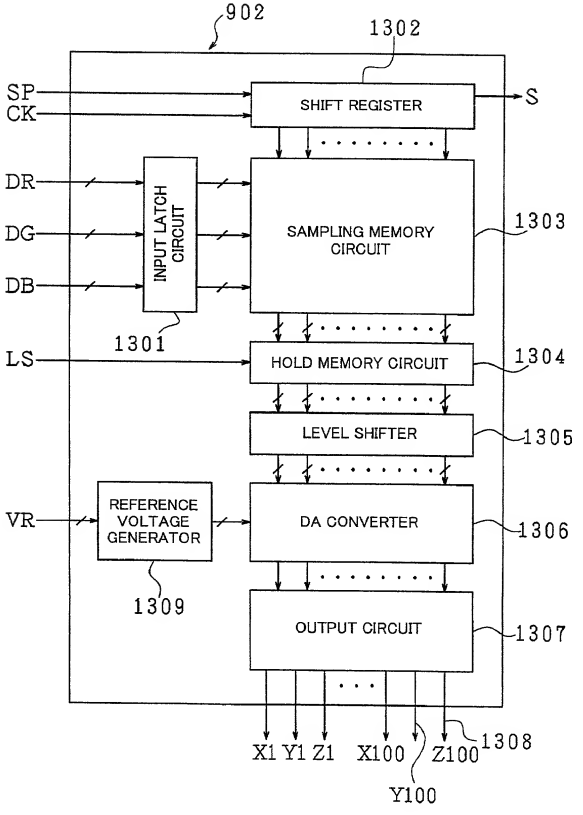

HIGH LEVEL
1204
1203
1201
1202
LOW LEVEL

FIG. 17


902
1302
SP
CK
SHIFT REGISTER
S
DR
DG
DB
INPUT LATCH CIRCUIT
SAMPLING MEMORY CIRCUIT
1303
1301
LS
HOLD MEMORY CIRCUIT
1304
LEVEL SHIFTER
1305
VR
REFERENCE VOLTAGE GENERATOR
DA CONVERTER
1306
1309
OUTPUT CIRCUIT
1307
1308
X1 Y1 Z1
X100
Z100
Y100

TOSTOT:0704660

FIG. 18

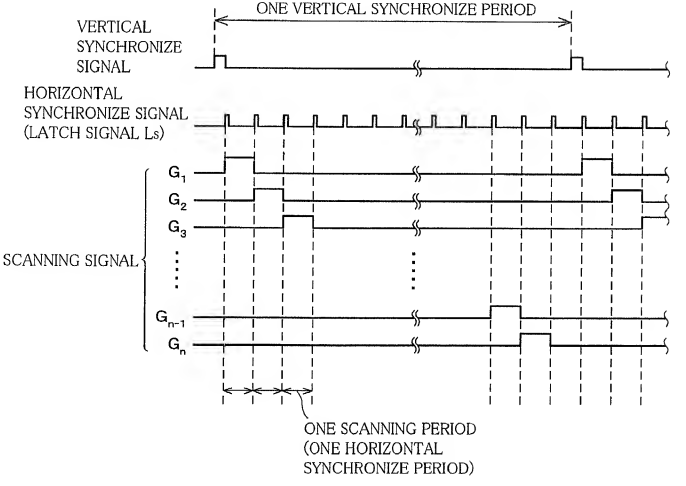


FIG.19 (a)

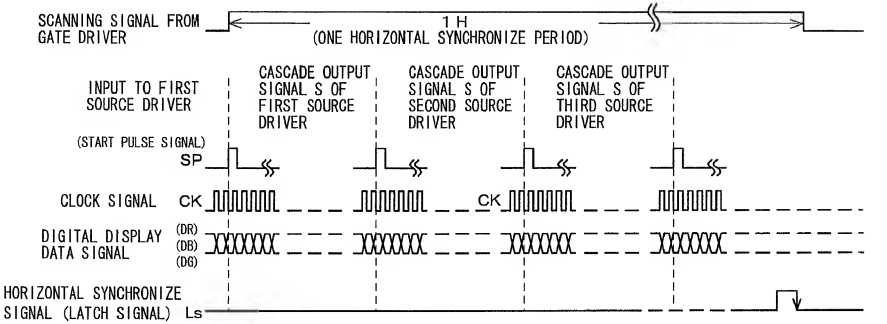


FIG.19 (b)

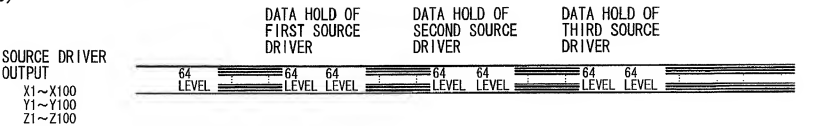


FIG. 20

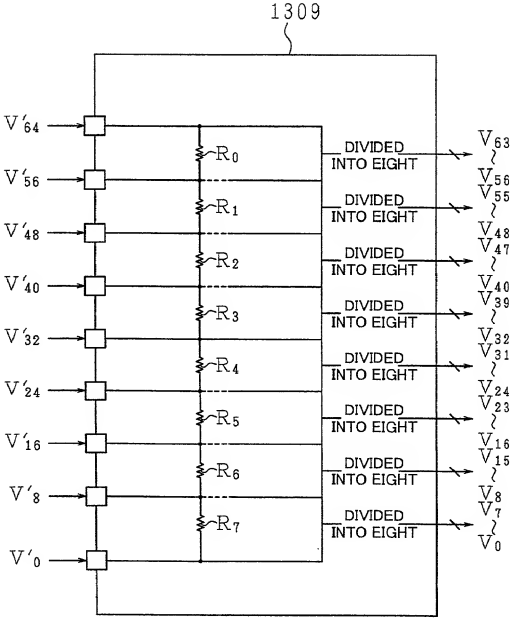

1309
V'64
V'56
V'48
V'40
V'32
V'24
V'16
V'8
V'0
R0
R1
R2
R3
R4
R5
R6
R7
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
DIVIDED INTO EIGHT
V63
V56
V55
V48
V47
V40
V39
V32
V31
V24
V23
V16
V15
V8
V7
V0

FIG. 21

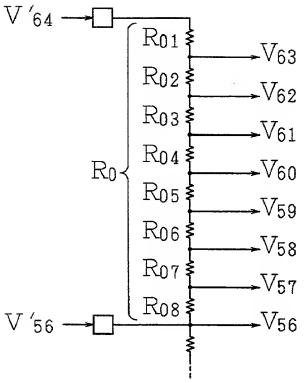
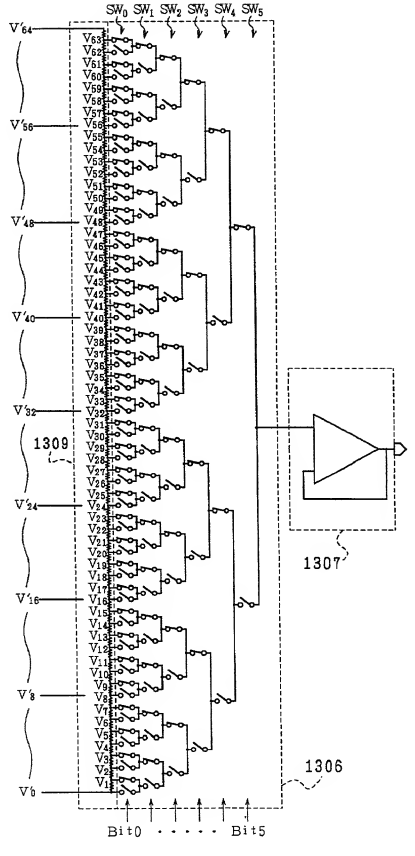

V'64
R01
R02
R03
R04
R0
R05
R06
R07
R08
V'56
V63
V62
V61
V60
V59
V58
V57
V56

FIG. 22


SW0 SW1 SW2 SW3 SW4 SW5
V'64
V'56
V'48
V'40
V'32
V'24
V'16
V'8
V'0
1309
1307
1306
Bit0 ····· Bit5

TOSTOT OTGH2660

FIG. 23

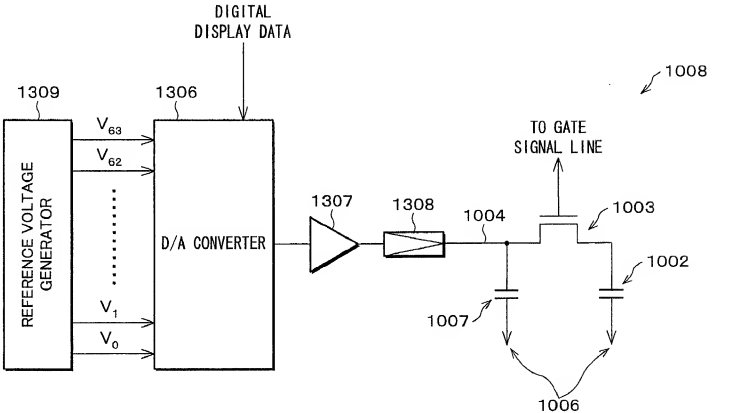
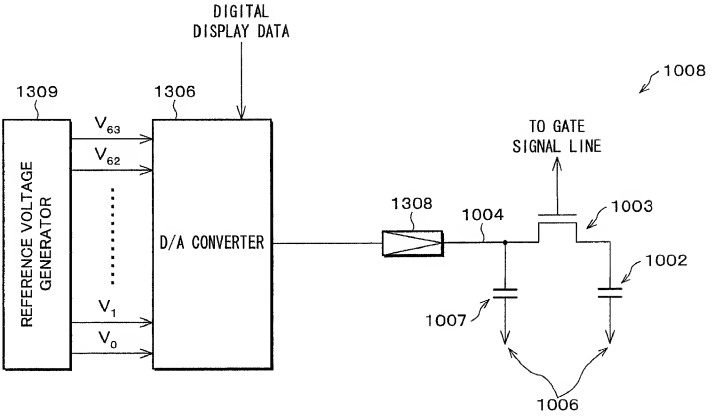


FIG. 24


DIGITAL
DISPLAY DATA
1008
1309
1306
REFERENCE VOLTAGE GENERATOR
V_{63}
V_{62}
V_1
V_0
D/A CONVERTER
TO GATE
SIGNAL LINE
1308
1004
1003
1002
1007
1006

JP2007-078766

FIG. 25

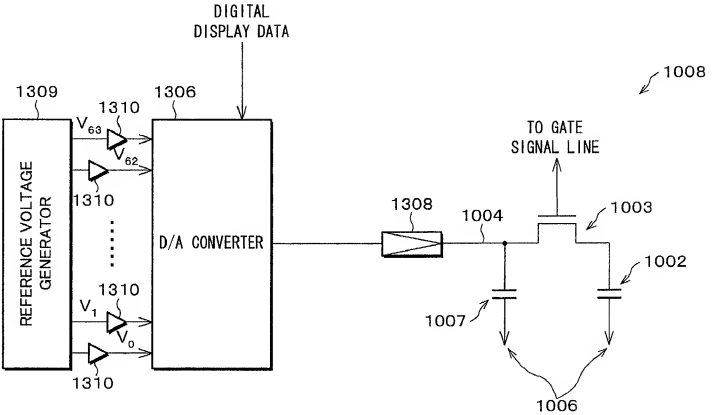


FIG. 26 (a)

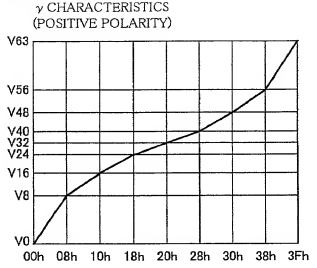


FIG. 26 (b)

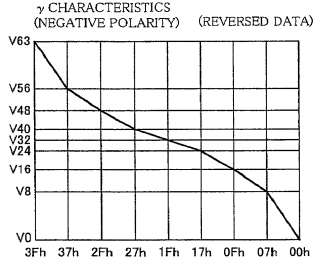


FIG. 26 (c)

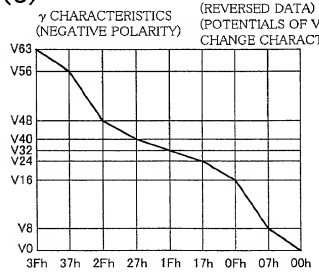


FIG. 27

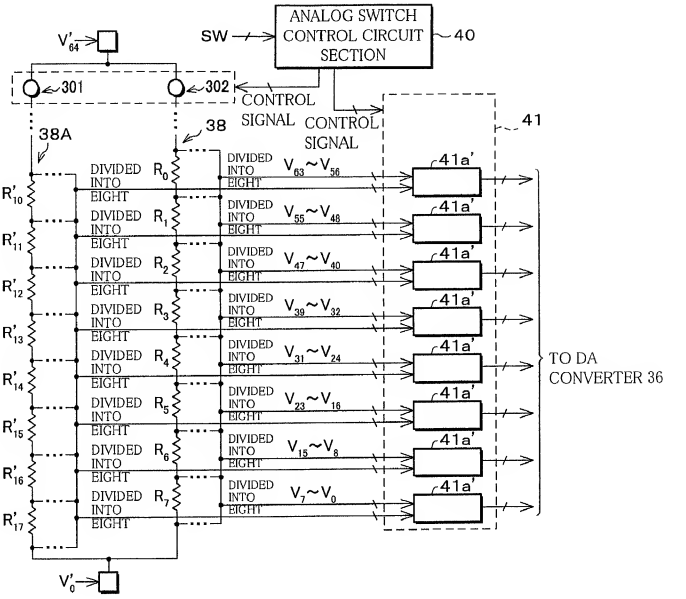

ANALOG SWITCH CONTROL CIRCUIT SECTION
40
SW
V'_{64}
301
302
CONTROL SIGNAL
CONTROL SIGNAL
41
38A
38
DIVIDED INTO EIGHT
R_0
R_1
R_2
R_3
R_4
R_5
R_6
R_7
$V_{63}\sim V_{56}$
$V_{55}\sim V_{48}$
$V_{47}\sim V_{40}$
$V_{39}\sim V_{32}$
$V_{31}\sim V_{24}$
$V_{23}\sim V_{16}$
$V_{15}\sim V_8$
$V_7\sim V_0$
41a'
R'_{10}
R'_{11}
R'_{12}
R'_{13}
R'_{14}
R'_{15}
R'_{16}
R'_{17}
V'_0
TO DA CONVERTER 36

FIG. 28

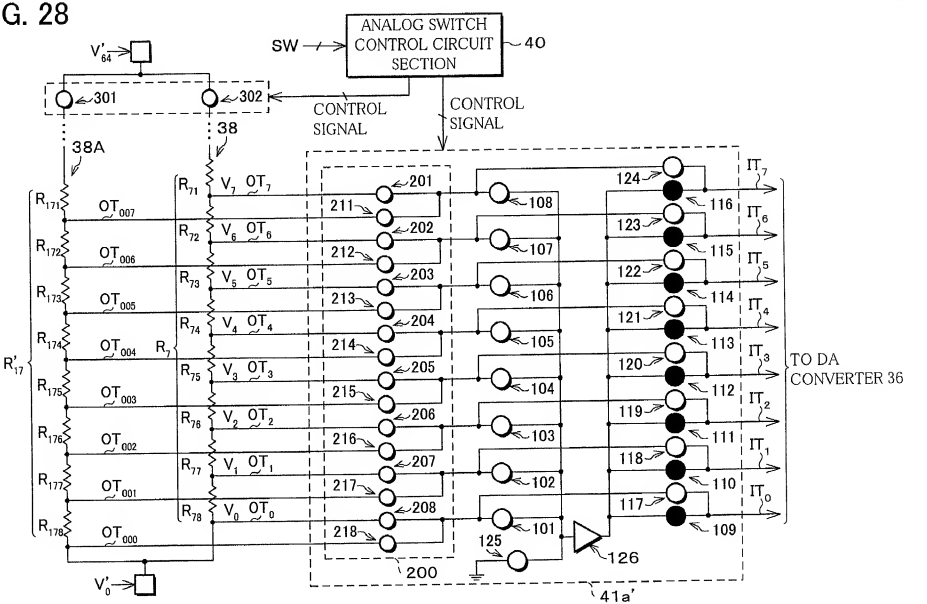

ANALOG SWITCH CONTROL CIRCUIT SECTION
40
SW
CONTROL SIGNAL
CONTROL SIGNAL
301
302
38
38A
TO DA CONVERTER 36
200
41a'
125
126

FIG. 29

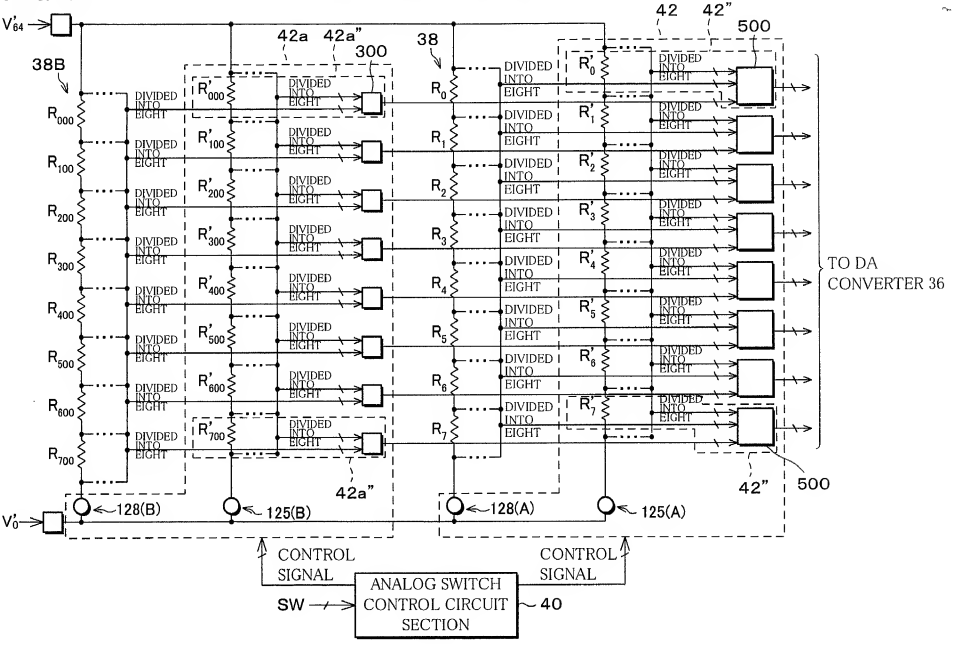
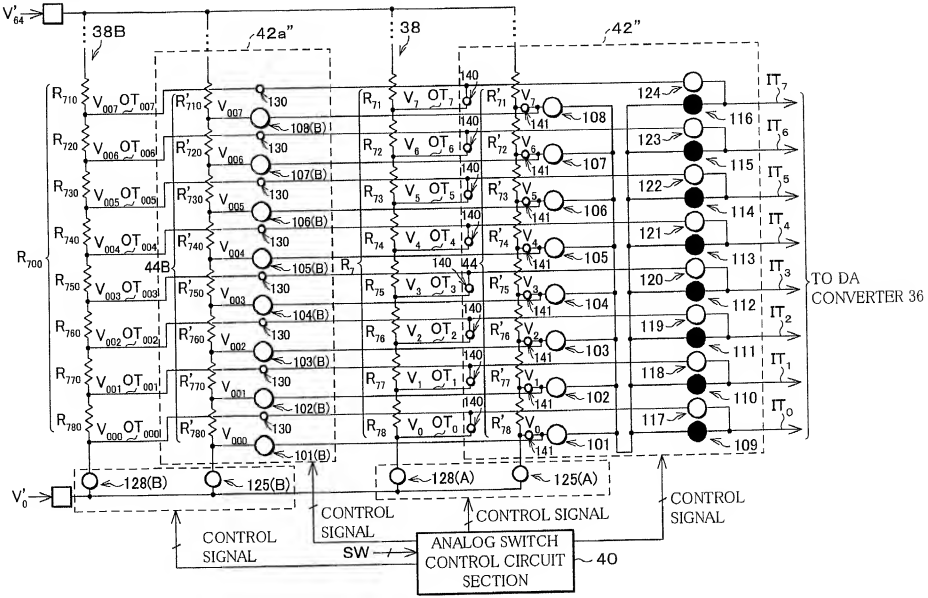

V'64
V'0
38B
38
42a
42a"
300
42
42"
500
R'000
R'100
R'200
R'300
R'400
R'500
R'600
R'700
R000
R100
R200
R300
R400
R500
R600
R700
R'0
R'1
R'2
R'3
R'4
R'5
R'6
R'7
R0
R1
R2
R3
R4
R5
R6
R7
DIVIDED INTO EIGHT
TO DA CONVERTER 36
128(B)
125(B)
128(A)
125(A)
CONTROL SIGNAL
CONTROL SIGNAL
SW
ANALOG SWITCH CONTROL CIRCUIT SECTION
40

FIG. 30


V'64
38B
42a"
38
42"
R710
R720
R730
R740
R700
R750
R760
R770
R780
44B
R7
R'710
R'720
R'730
R'740
R'750
R'760
R'770
R'780
R71
R72
R73
R74
R75
R76
R77
R78
R'71
R'72
R'73
R'74
R'75
R'76
R'77
R'78
130
140
141
108(B)
107(B)
106(B)
105(B)
104(B)
103(B)
102(B)
101(B)
108
107
106
105
104
103
102
101
124
123
122
121
120
119
118
117
116
115
114
113
112
111
110
109
IT7
IT6
IT5
IT4
IT3
IT2
IT1
IT0
TO DA CONVERTER 36
V'0
128(B)
125(B)
128(A)
125(A)
CONTROL SIGNAL
CONTROL SIGNAL
CONTROL SIGNAL
CONTROL SIGNAL
SW
ANALOG SWITCH CONTROL CIRCUIT SECTION
40